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MISCELLANEOUS REPORT NO. 14

CERTIFYING FOREST SEEDS

By Paul O. Rudolf, Forester

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
Lake States Forest Experiment Station

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Purchasers of forest seed, like those of other commodities, want to know what they are getting for their money. Unless they deal with local collectors known to them or carry on their own seed collection, they frequently do not know the origin of the seed they obtain. For this reason some certification of forest seed as to origin is needed. Certification as to quality also is desirable.

The need for forest seed certification first became evident in Europe after cheap, usually non-local, seed had been used in large-scale reforestation for some time. By the 1930's almost every country in western Europe required tree seed certification either by law or through voluntary action. Germany, with almost its entire forest area of planted origin, had the worst problem and the most stringent laws. The German law of December 1934, for instance, required owners to eliminate stands and individual trees of undesirable races, to use only seed from certified forests or stands, and to refrain from using, selling, or giving away seed obtained from undesirable stands. The law further provided heavy fines or imprisonment for infractions, and stipulated that no one would be compensated for losses resulting from enforcement of the law. However, even this strict law was not completely effective because of the indiscriminate mixing of races in past planting programs. (3)

What Has Been Done in the United States?

In this country we probably shall never depend upon planted forests to the extent the Germans and others have. But that does not mean that we can afford to be careless of what we plant. Reliable knowledge as to seed origin and quality is still a necessary basis for a sound reforestation program. Some form of seed certification, therefore, is needed here.

There are already some bases for forest seed certification in the United States. Probably the first step occurred in the early 1930's when some seed dealers began to furnish fairly detailed data as to seed origin, largely at the insistence of European purchasers. The number of dealers carrying out this practice has been increasing.

1/ Presented at the Region 9-State Nurserymen's Meeting at the Higgins Lake State Training School, Michigan, September 8, 1950.

2/ Maintained by the U. S. Department of Agriculture, Forest Service, in cooperation with the University of Minnesota.

The Plains Shelterbelt or Prairie States Forestry Project accomplished the planting of some 18,500 miles of field shelterbelts from 1935 to 1942 in a zone about 100 miles wide and extending from North Dakota into northern Texas. It was recognized at the outset that the foundation of this program must be the use of seed from hardy native or approved exotic trees (14). The shelterbelt zone was divided into 11 seed collecting areas, and to a large extent seed collection was confined to the area and to the same latitude in which planting was done. Careful and detailed records were kept of each seed collection, and collections from selected specimen trees or groups were kept separate.

As concerns imported seed there has been a means of control since 1935 when an amendment to Quarantine 37 included these provisions: "Each package shall show nature and quantity of contents, the district or locality and country where grown, name and address of exporter." (3)

The United States Department of Agriculture in 1939 adopted a tree and shrub seed policy which requires the use of seed or stock of known origin, proof of origin from the vendor, accurate record as to year, species, origin, and proof of origin of all lots, the use of local seed wherever possible (within 100 miles and 1,000 feet in elevation of the planting site) or the use of seed from regions of similar climate and latitude if local seed were unavailable. The policy also suggested the continuation of experiments on seed source, and urged that States and other cooperators with the Government adhere to the same policy (11). If complied with rigidly, this policy would have resulted in a reasonable degree of seed certification. However, it has been overlooked all too often.

In 1939 there was an amendment to the New York seed law (10) requiring that each "separate container of the seeds of forest, fruit, shade or other trees, or shrubs, that are usually grown in this state, or may later be grown in this state, which are sold, offered, or exposed for sale within this state for seeding purposes, shall be clearly and plainly labeled in the English language to show: (1) the kind of seed, and the variety; (2) the approximate percentage of weight of pure seed; (3) the approximate percentage of germination; (4) the year of collection of such seed; (5) the specific locality (state and county in the United States, or nearest equivalent political unit in the case of foreign country) in which the seed was collected; (6) the name and address of the vendor of such seeds." This amendment has not actually resulted in seed certification, although it has opened the way. In other words, tree and shrub seed could be certified in the same manner as agricultural seed in New York. So far, the tree and shrub law has been of value chiefly in checking packet seed which was being sold upon the market, and it has served as some means of pressure on seed men and collectors who had tried in the past to sell and distribute uncleaned, old, low-germinating, or worthless tree seed to nurserymen and planters.3/ For instance, a test of 17 packets of tree and shrub seed in 1947 showed only 6 to be satisfactory (9). The majority of forest seed, however, is not sold in packets but in bulk quantities. No seed of that nature has yet been tested under the provisions of this law.

3/ Information from C. E. Heit, Research Associate, N. Y. State Agr. Exp. Station in a letter of August 24, 1950 to Paul O. Rudolf, on file at Lake States Forest Experiment Station.

The Georgia seed law was passed in March 1941. It regulates the labeling and sale of agriculture, vegetable, and certain forest tree seeds -- only the native pines are covered. According to this law each container sold or offered for sale must bear a label showing, (1) the state and county of origin; (2) the name of the collector; (3) the time of collection, including the year and month; (4) the technical generic and specific names in use by the United States Department of Agriculture; (5) the purity of the seed as a percent by weight of whole, normal seeds; and (6) the germination percent tested within nine months of sale or offering for sale. The weak spot in the law is the exemption of farmers who may sell seed within the county in which it was grown without restriction. If it is sold outside of the county where grown the farmer must label the container to show, (1) the name of the grower; (2) the kind of seed; (3) the calendar year in which harvested; (4) whether mixed with undesirable or noxious weed seeds. Dealers who buy seeds from farmers may sell the seeds by complying with the same provisions as the farmers (8). No reports are available to show to what extent this law has been enforced and what effect it may have had on the seed trade in Georgia.

Very recently, certified seed has been used in the Nisqually Nursery of the Forest Conservation Committee of the Pacific Northwest Industries.4/ This seed certification program was started with the collection of cones from the 1949 crop, and the 1950 crop in the nursery has been sown exclusively with certified seed. The certification has been carried out in this manner. Each member company collecting its own cones fills out its own tree seed certification form (this form includes detailed information as to the species, strain, and locality of collection, as well as date, collector, and information on the stand and site where grown and seed quality). The forester for the company certifies the authenticity of the information on each seed lot, and if he is considered reliable enough, the Committee merely signs the certification form. If there is any question or incompleteness in any of the data, such gaps are completed by inquiry directly to the forester before the Committee signs the form. The Committee maintains a permanent file of each of the seed certification forms by seed years, and one copy of the form accompanies each lot of seed to the nursery or to the direct seeding project. One copy is maintained in the files of the collecting agency and the seed producer. When trees grown from certified seed are shipped from the nursery they are keyed by lot number and identified sufficiently so that the company planting the trees will have a complete record of the origin of its stock, and thus be able to determine their suitability for the locality and help the Committee in a long-term effort to develop superior natural strains of native species.

Despite these bases for seed certification, or partial seed certification, progress in the United States has been small and a great deal more effort is needed if a seed certification program of any great value and extent is to be instituted.

4/ According to a letter of August 28 from W. D. Hagenstein, Forest Engineer for the Committee, to Paul O. Rudolf of the Lake States Forest Experiment Station.

What Can Be Done in the United States

Until such time as superior strains of our native species have been selected by experimental procedures, the best natural seed sources are virgin stands of timber in the general locality in which the trees are to be grown. Unfortunately, the virgin forests are largely gone in many parts of the United States. However, where good quality virgin stands still remain, and also where good quality second-growth stands of mature size occur, portions of them should be set aside for seed collecting purposes. For the country as a whole, not more than 15,000 acres would have to be set aside for such seed production (12). If the stands are on private land, arrangements probably could be made with the owners to pay them some sort of flat rate or royalty for the privilege of harvesting the seed crop, and thus offset, at least in part, anything they might lose from failure to harvest the timber.

Foresters, nurserymen and seed dealers have discussed seed certification from time to time during the past 20 years. There have even been formal canvasses of opinion. (7) Naturally they have not all agreed on what should be done but the majority seem to recognize the desirability of some form of seed certification. Some would prefer the compulsory type of seed certification. They would have all States enact seed certification laws and have the tree seed handled much in the same manner as agricultural seed now is. Some even would advocate a Federal law governing tree seed certification. However, the majority of foresters and nurserymen who have expressed an opinion on this matter seem to prefer a voluntary seed certification program.

Such a program was suggested over 20 years ago by C. G. Bates (5) and has been advocated by several other foresters since then (1, 2, 4). It would require considerable educational effort in order to convince the major users of tree seed that seed certification is a necessity.

What should such a program include? Very briefly, it should require that the traffic in forest seed should meet these standards (11):

1. Seed collectors should label their seeds as to species, time and place of collection (geographic locality, altitude, and preferably also stand and soil conditions).

2. Dealers should purchase only properly labeled seeds and only from collectors whose reliability has been established by reputation or some system of licensing or examination.

3. Users of seed or nursery stock should demand adequate information as to seed origin, and buy only stock of local origin or of proven adaptability to local conditions.

Obviously, such a program, if carried out, would have to make a distinction between seed collected from natural stands and those collected from planted stands. In the case of the latter, information would also have to be available as to their original home locality. (1)

If the United States Department of Agriculture's tree seed policy were closely adhered to, and if cooperating agencies were convinced of the need for following the same policy, the matter of tree seed certification for public nurseries would be pretty well taken care of.

One more step, however, would be necessary for complete certification as carried out in Europe. Not only origin but also quality of seed would have to be certified (6). This would mean that seeds would have to be tested for such matters as purity, soundness, and germinability, at some recognized unbiased laboratory. It has been suggested in the past that a central tree seed laboratory be set up in this country (13). It is possible that if such a program of seed certification were to be carried out nationally, regional laboratories would need to be established. Possibly tests of this nature could be undertaken through expanding the facilities of present State Seed Laboratories now devoted largely to the testing of agricultural seed. This has been done in New York State.

Whatever the method or procedure used, the first requirement will have to be that the majority of seed users actually want certified seed.

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